CANADIAN PETROLEUM ASSOCIATION

AIR CURTAIN INCINERATOR

EQUIPMENT PERFORMANCE EVALUATION REPORT

00901

EXECUTIVE SUMMARY

Approximately 50 tonnes of oil contaminated debris and related wood products were incinerated during a ten hour equipment performance evaluation on March 27, 1987.

CONCLUSION

The Canadian Petroleum Association (CPA) Mobile Air Curtain Incinerator demonstrated that it has the capability to incinerate bulk oil spill debris with minimal smoke emissions and generate hot water for cleaning up oil spill sites in an environmentally acceptable, cost effective, efficient manner.

RECOMMENDATION

The Mobile Air Curtain Incinerator should be utilized for disposal of oil spill debris as required throughout the various areas of operations.

(continued)

INTRODUCTION

On March 27, 1987 a 'obile Air Curtain Incinerator owned and operated by the Canadian Petroleum Association was transported by Brydun Oilfield Enterprises (Air Curtain Incinerator Custodian) located at Whitecourt, Alberta, (1-403-778-3730) to a test site in the Whitecourt area for an equipment performance evaluation.

The purpose of the industry-sponsored incineration program was to evaluate the incinerator's ability to combust oil contaminated trash and debris obtained from spill sites.

INCINERATOR DESCRIPTION AND PRINCIPLE OF OPERATION

The Air Curtain Incinerator assembly is mounted on a mobile "B" train unit which is used for transporting a diesel engine power house air blower and incineration tank unit.

The operating principle of the device involves the diesel engine driving the air blower at maximum revolutions, delivering approximately 20,000 standard cubic feet of air per minute which is directed into a five meter long steel blower manifold that is angled at a thirty degree slope into a five meter long, two meter wide by two meter deep incineration tank. A bottomhole aerator consisting of a one meter long by 2.5 cm OD perforated gas pipe attached to a five meter length of vertical air supply pipe is lowered to the bottom of the tank. Compressed air is injected into the bottomhole aerator to control burn efficiency.

A fire is started at the bottom of the tank using oil spill debris consisting of oil contaminated straw, hay, grass, logs, etc. Once the fire is burning sufficiently the diesel engine is started and the blower engaged.

(continued)

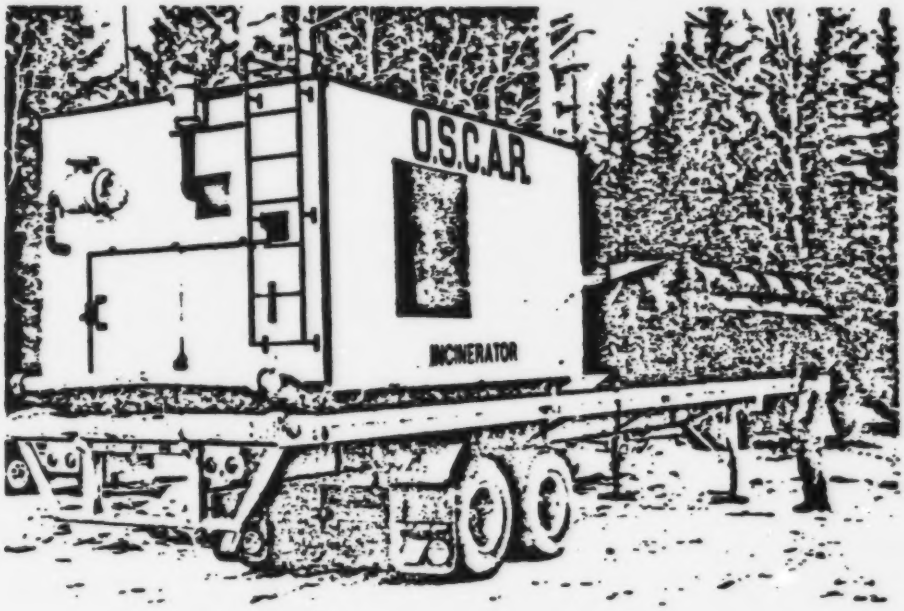
The air curtain effect created by the air deflecting off the opposite wall from the blower manifold and bouncing off the bottom and up the side of the water jacket cooled incineration tank, results in the repeated combusion of the gases, thereby significantly reducing the degree of visible smoke emission to atmosphere.

The unit at maximum revolutions is capable of incinerating approximately five tonnes per hour of bulk debris which can be loaded into the tank with conventional front-end loaders and/or backhoes. Note: Actual burn rates will vary and are dependent upon the volatility of the material and dryness of the debris, etc.

The unit is capable of generating approximately 16 m^3 per hour of hot water with an average temperature of 180°F at maximum capacity. The tank is equipped with five, seven and ten cm inlet and outlet water valves in an effort to provide adequate tank truck or vacuum truck hook-up capabilities. The hot water can be used for flushing spill sites and cleaning shorelines.

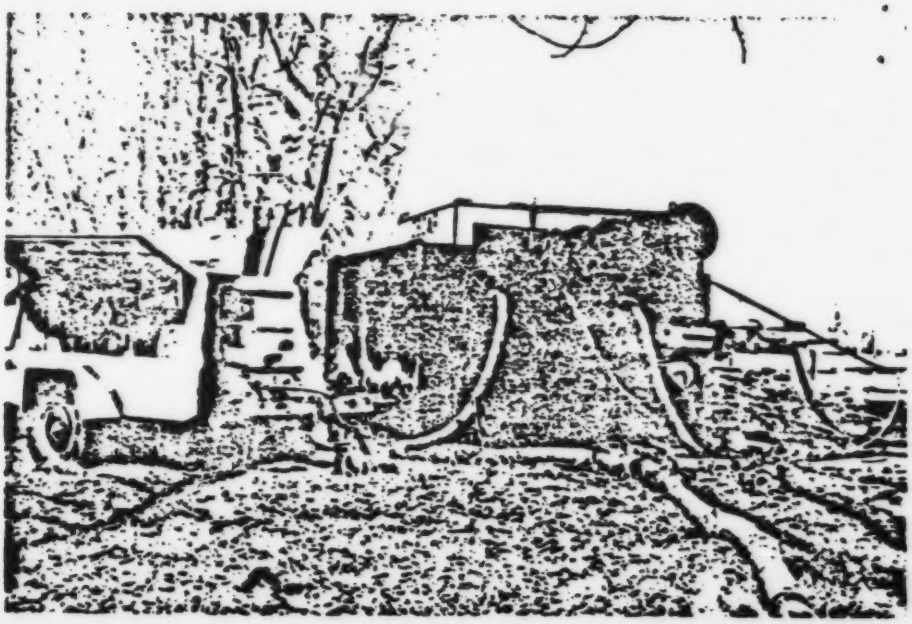
If hot water is not required for water washing then the fluids can be evaporated at a rate of approximately 1 m^3 per hour.

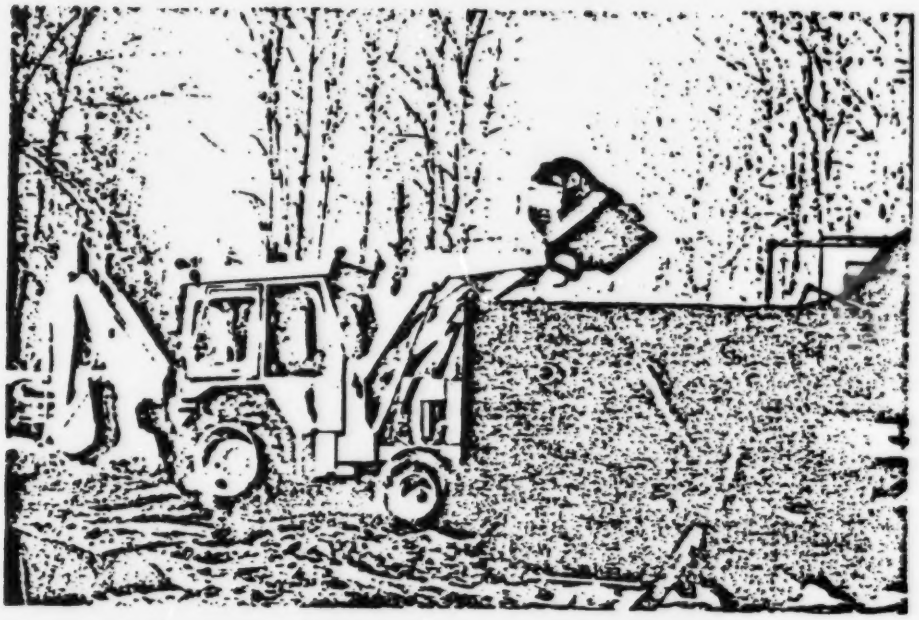
The unit is available to all CPA, IPAC and PPAM members for disposal of oil spill debris and associated liquids.



CANADIAN PETROLEUM ASSOCIATION AIR CURTAIN INCINERATOR

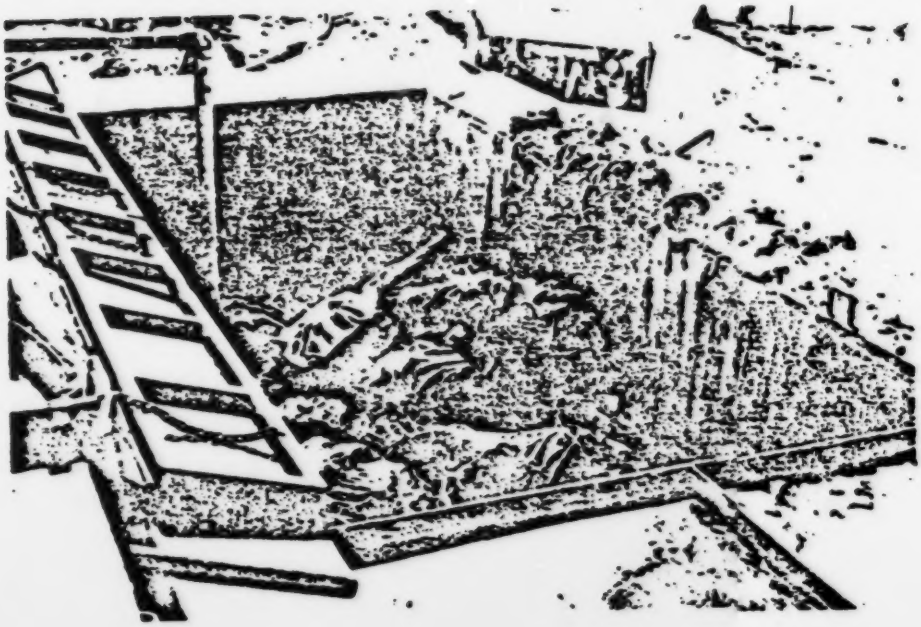
NOTE: DIESEL/AIR BLOWER POWER HOUSE ASSEMBLY AND INCINERATION TANK ARE TRANSPORTED ON A MOBILE "B" TRAIN UNIT

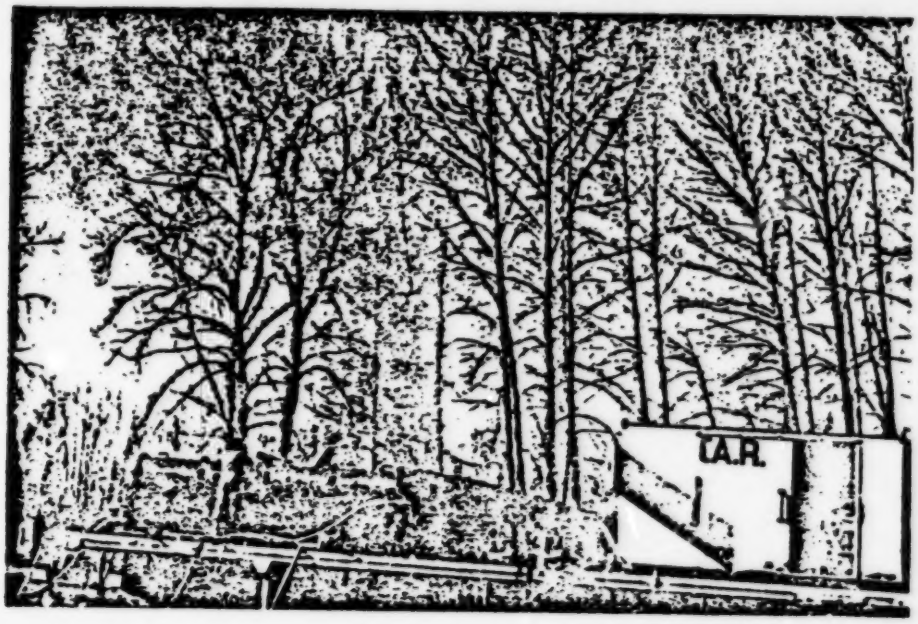




OIL SPILL DEBRIS IS LOADED INTO THE TANK

WITH CONVENTIONAL OILFIELD LOADING EQUIPMENT

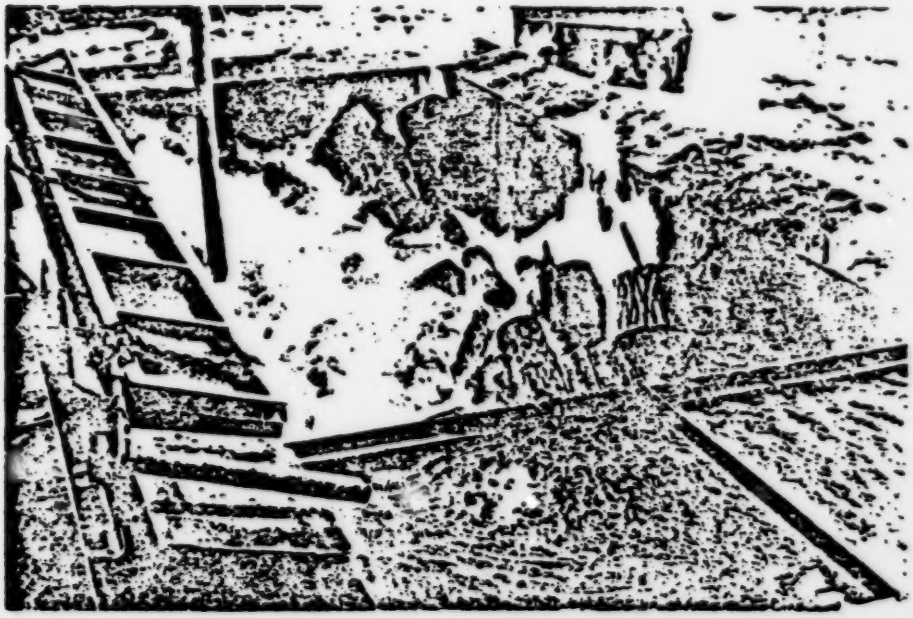




A FIRE IS STARTED WITH BLOWER UNIT TURNED OFF

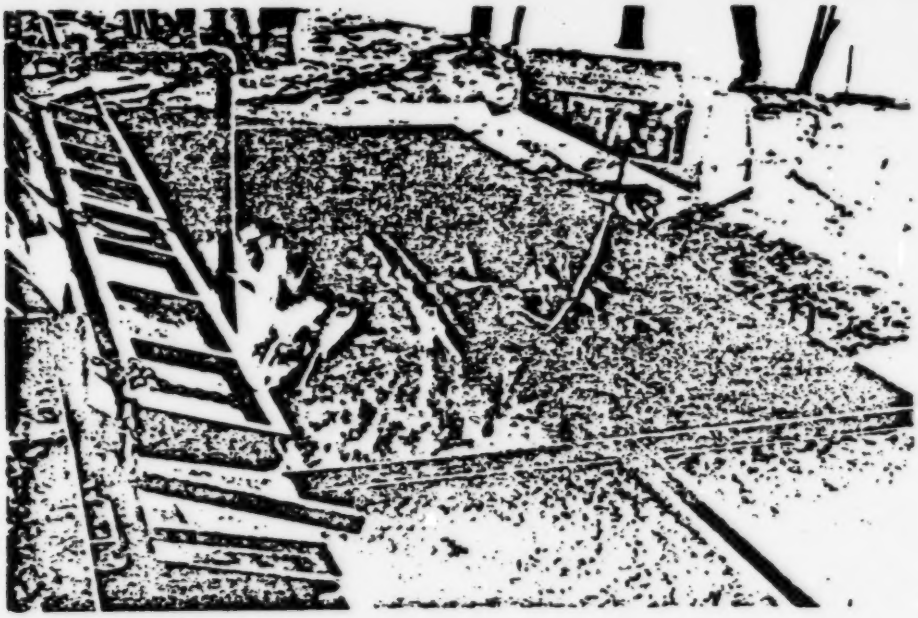
NOTE: SMOKE IS VISIBLE FOR A SHORT PERIOD

DURING START-UP AND SHUT-DOWN PROCEDURES

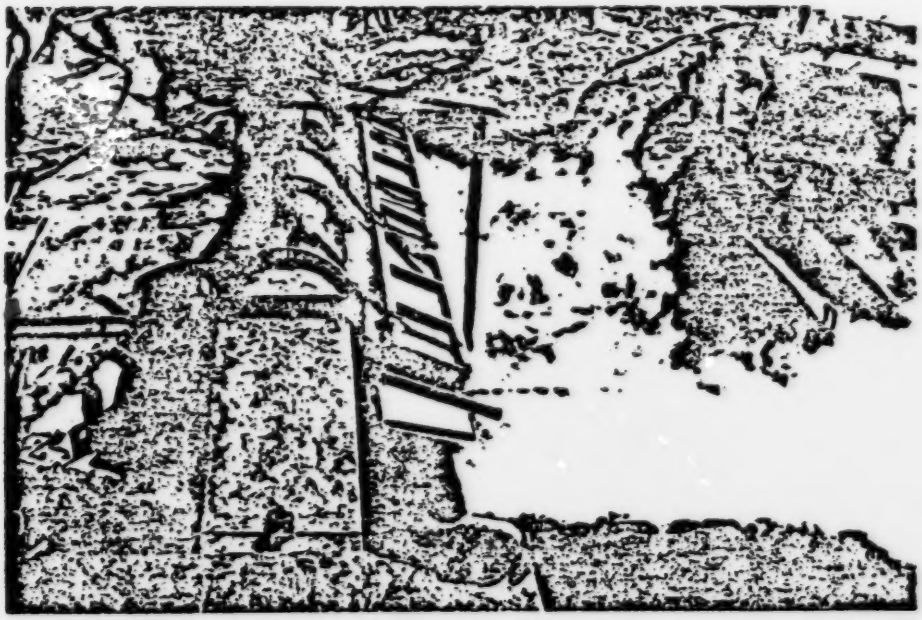


AIR FAN BLOWER ASSEMBLY AND BOTTOMHOLE AERATOR

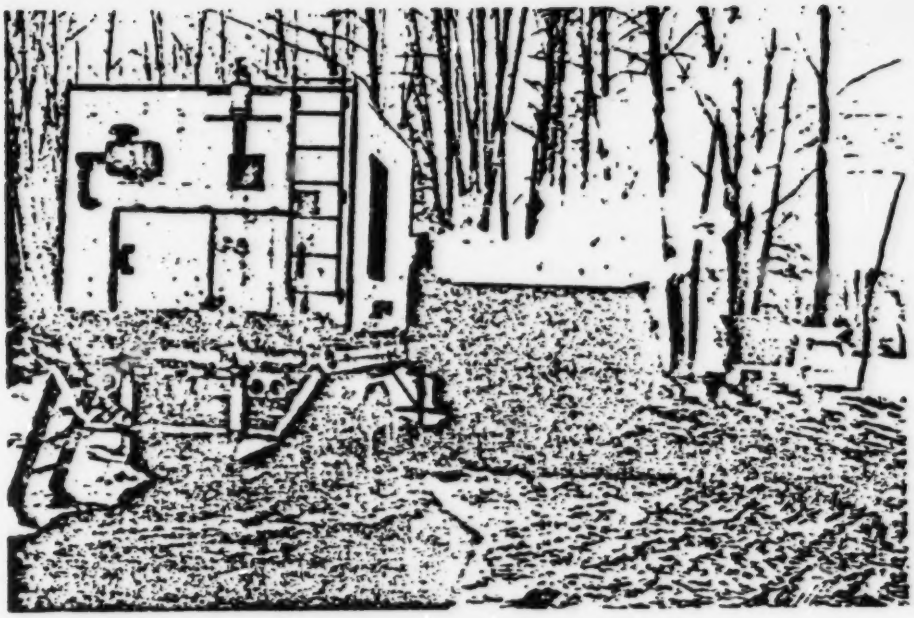
CONTROL BURN RATE EFFICIENCY



RECYCLED WATER IS CIRCULATED THROUGH THE WATER JACKET RESULTING IN EFFECTIVE TEMPERATURE CONTROL WHICH MAINTAINS THE STRUCTURAL INTEGRITY OF THE INCINERATOR TANK ASSEMBLY



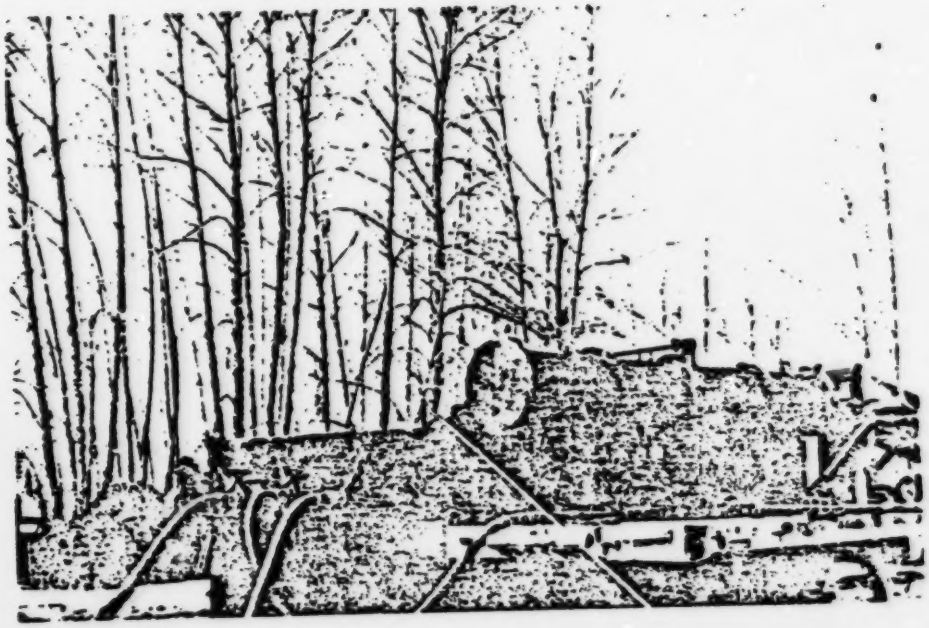
NOTE: APPROXIMATELY 1 m^3 OF WATER PER HOUR IS EVAPORATED AT MAXIMUM BURN RATES. A 16 m^3 WATER MAKE UP TANK ACCOMPANIES THE AIR CURTAIN INCINERATOR UNIT

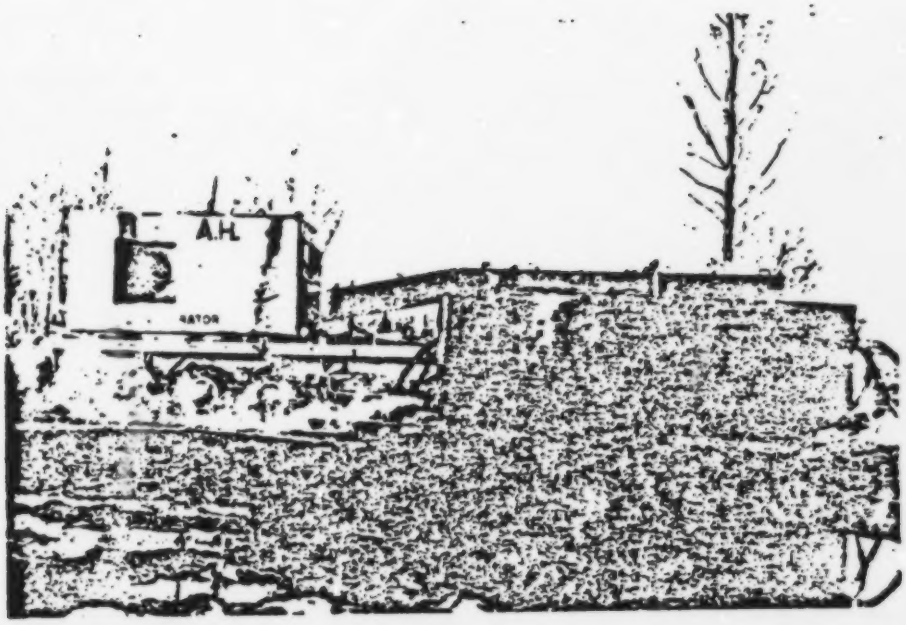


AIR CURTAIN INCINERATOR MAINTAINS

EFFECTIVE AIR EMISSION EFFICIENCY

WHILE BLOWER FAN UNIT IS OPERATING

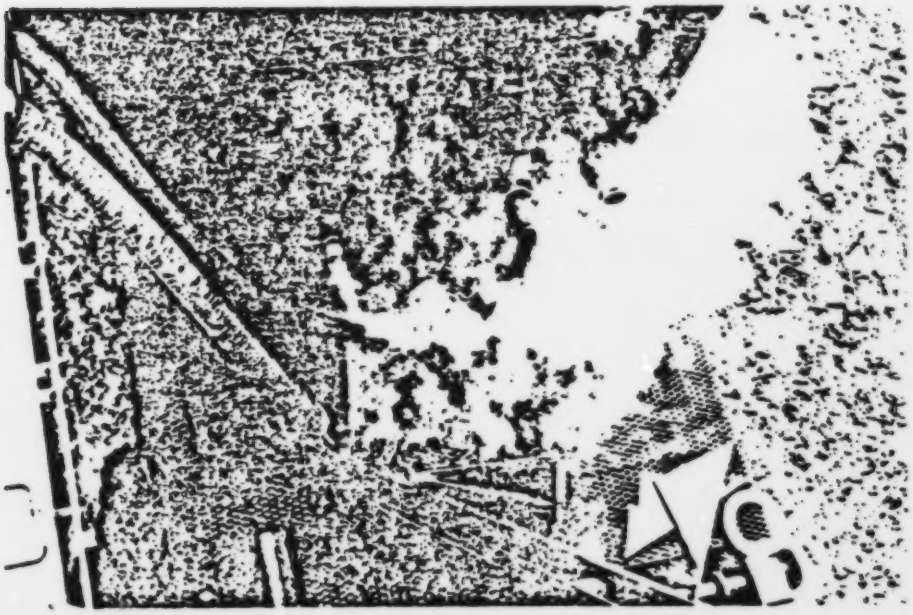




THE INCINERATOR UNIT GENERATES APPROXIMATELY

16 m^3 OF HOT WATER PER HOUR AT MAXIMUM

BURN RATES FOR WASHING DOWN SPILL SITES.



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26 November 1979

File: 415.0

Hudson's Bay Oil & Gas Ltd.
700 Second Street S.W.
Calgary, Alberta
T2P 0X5

Attention: Mr. D. N. Kolowachuk

Dear Mr. Kolowachuk:

Re: PROSCARAC Research & Development
Subcommittee - Incinerator Trials

This letter will confirm your discussions with Dr. Thimm concerning the incinerator being developed by the above committee.

This department takes the view that waste hydrocarbons generated and recovered after abnormal conditions such as pipeline breaks or plant upsets are, under some circumstances, best disposed of by burning. At present, this implies an acceptance on our part of sometimes substantial ground-level emissions of particulates that may be accompanied by ambient SO_2 violations. We therefore welcome the development of incinerators which have the capability of reducing particulate emissions to a minimum as an improvement on current practise. Therefore, please be advised that the ERCB will not be raising objections in principle to the use of such equipment, provided that the customary practise of obtaining burn permits from the Board's appropriate area office is maintained in each individual instance.

Please note, however, that any proposed use of such incinerators to dispose of oily wastes that accumulate at certain plants as products of normal operations will require a licence from Alberta Environment as well as Board approval, since such waste cannot be considered the result of upset conditions.

Please contact Dr. Thimm if further clarification is required.

Yours truly,

R. W. Edgecombe

R. W. Edgecombe
Assistant Manager
Environment Protection